

PATENT ABSTRACTS OF JAPAN

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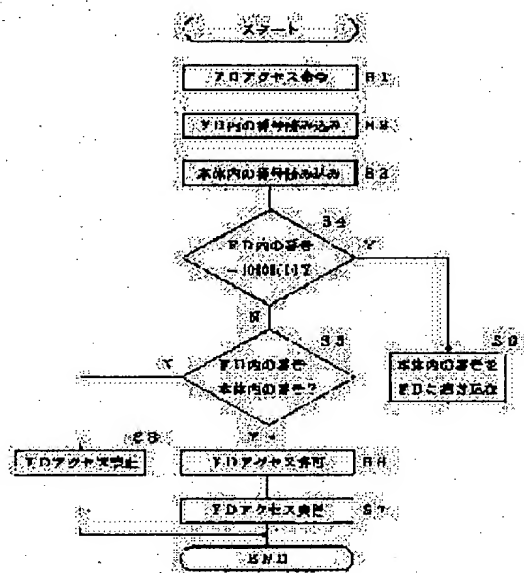
(54) INFORMATION PROCESSOR

(57)Abstract:

PURPOSE: To inhibit the information processors other than the appointed from using the same storage medium by storing the proper information different from each other for each information processor to write these information in a replaceable storage medium and reading out the proper information to compare it with the proper information stored in a storage means when the storage medium is loaded into the information processor.

CONSTITUTION: When an access instruction is issued to an FD (floppy disk) (S1), an FDD (floppy disk drive) reads the proper information out of the FD (S2). Then a CPU reads the proper information out of a ROM (S3). It is decided whether the relevant proper information was read out of the FD. When the coincidence is confirmed between both proper information, it is decided that the relevant FD has never received any access.

Thus the processing proceeds to S9. Then the proper information read out of the ROM is written into the FD, and an access is granted and carried out (S6, S7). If no coincidence is confirmed between both proper information, the processing proceeds to S5. Then an access is granted when the coincidence is secured between the proper information read out of the FD with that read out of the ROM. When no coincidence is secured, no access is granted respectively.



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CLAIMS

[Claim]

[Claim 1] In the information processor which reads and processes data from an exchangeable storage When equipped with a peculiar information storage means to memorize a peculiar information different for every one equipment, the write-in means which writes the aforementioned peculiar information in the storage in which the aforementioned exchange is possible, and the aforementioned storage, The information processor characterized by establishing the comparison means in comparison with the peculiar information which reads the peculiar information memorized by this storage and is memorized by the aforementioned peculiar information storage means.

[Claim 2] The information processor characterized by to establish a comparison means compare a reading means perform reading of the write-in means and the information which write in an information to the exchangeable storage which made an information peculiar to a medium memorize beforehand, and a peculiar information storage means memorize the peculiar information read by this reading means with the peculiar information memorized by this peculiar information storage means and the peculiar information memorized by the aforementioned storage.

[Claim 3] The claim 1 characterized by establishing an access prohibition means to forbid the access to a storage as a result of the comparison by the aforementioned comparison means when both the peculiar information is not in agreement, or an information processor given in two.

[Claim 4] The aforementioned write-in means is the information processor of the claim 3 publication characterized by having the means which writes an access prohibition information in a storage as a result of the comparison by the aforementioned comparison means when both the peculiar information is not in agreement.

[Claim 5] The aforementioned access prohibition means is the information processor of the claim 4 publication characterized by having a means to forbid the access to the storage with which the aforementioned access prohibition information was written in.

[Claim 6] An information processor given in any 1 term of claim 1 **** 5 characterized by establishing an encryption means to encipher in case the peculiar information memorized by the aforementioned peculiar information storage means is written in a storage.

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DETAILED DESCRIPTION

[Detailed description]

[0001]

[Field of the Invention] this invention relates to a use management of the storage in the information processor using the exchangeable storage of a word processor, a personal computer, etc.

[0002]

[Prior art] From the former, when supplying application software etc. to a personal computer etc., the storage that carrying and circulation of a floppy disk, a magneto-optic disk, etc. are easy and cheap is used. the case where such a storage is used -- a purchaser -- him, in order to prevent use by the user of an except, and the use on two or more equipments The number of times of installation, such as a hard disk, are recorded to a storage. are not made not to make installation more than the number of times of a convention perform, or The user information which records the user information to the storage at the time of first-time installation, and was recorded at the time of installation of the 2nd henceforth is displayed, it warned or the same information was made to input.

[0003]

[Object of the Invention] However, the same user was able to be able to install also with other users and equipments in the technique of recording the number of times of installation, if it is less than a number of times of a convention, and to install in two or more equipments by the technique of recording an user information.

[0004] Moreover, since the content was seen or rewritten also by whom when it had the same equipment or same software when the document created with the word processor was recorded to the above storages, there was a possibility of leading to a secret leakage. As this invention is made in view of the above-mentioned point and the same storage cannot be used with other information processors in the information processor using the storage in which the above exchange is possible, it aims at preventing an unauthorized use of software, a leakage of secret papers or the alteration by others of the content of storage, etc.

[0005]

[The means for solving a technical problem] In the information processor which reads and processes data from an exchangeable storage in order that this invention may attain the above-mentioned purpose When equipped, with a peculiar information storage means to memorize a peculiar information different for every one equipment, the write-in means written in the storage for which the peculiar information is exchangeable, and a storage, The comparison means in comparison with the peculiar information which reads the peculiar information memorized by the storage and is memorized by the above-mentioned peculiar information storage means is established.

[0006] Or it may be made a comparison means compare a reading means perform reading of the write-in means and the information which writes in an information to the exchangeable storage which made the information peculiar to a medium memorize beforehand, and a peculiar information storage means memorize the peculiar information read by the reading means with the peculiar information memorized by the peculiar information storage means and the peculiar information memorized by the aforementioned storage establishing.

[0007] Moreover, in each above-mentioned information processor, as a result of the comparison by the above-mentioned comparison means, when both the peculiar information is not in agreement, it is good to establish an access prohibition means to forbid the access to a storage.

[0008] Moreover, as a result of the comparison by the above-mentioned comparison means, when both the peculiar information is not in agreement, as for the write-in means in this information processor, it is good to have the means which writes an access prohibition information in a storage.

[0009] In this case, as for the access prohibition means in the above-mentioned information processor, it is good to have a means to forbid the access to the storage with which the above-mentioned access prohibition information was written in.

[0010] Moreover, in each above-mentioned information processor, you may be made to establish an encryption means to encipher in case the peculiar information memorized by the above-mentioned peculiar information storage means is written in a storage.

[0011]

[Operation] According to the 1st above-mentioned invention, an information peculiar to equipment can be given, the peculiar information can be written in a storage, and the storage can distinguish whether it is what was used with the information processor from next time by comparing both.

[0012] Moreover, according to the 2nd above-mentioned invention, an information peculiar to a medium can be given, the peculiar information can be written in the storage means in the mainframe of equipment, and the

storage can distinguish whether it is what was used with the information processor from next time by comparing both.

[0013] Moreover, since according to the 3rd above-mentioned invention the access to the storage will be forbidden as a result of a comparison if both peculiar informations differ, the use of those other than a specific information processor can be prevented.

[0014] Moreover, since according to the 4th above-mentioned invention an access prohibition information will be written in the storage as a result of a comparison if both peculiar informations differ, it can distinguish whether the storage may be used by other information processors.

[0015] Moreover, since all accesses after receiving the storage with which the access prohibition information was written in are forbidden according to the 5th above-mentioned invention, it can avoid performing the access to the storage used unjustly also at once.

[0016] Moreover, since according to the 6th above-mentioned invention a peculiar information is enciphered and written in in case a peculiar information is written in a storage, it can prevent analyzing and rewriting a peculiar information.

[0017]

[Example] Hereafter, the example of this invention is concretely explained based on an accompanying drawing. Drawing 2 is the whole one example block diagram of the information processor by this invention. The keyboard for an user doing the direct input of a character, the numeric value, etc., or the display (henceforth CRT) which displays the data-processing section among which one in drawing performs an operation, radial transfer, etc. of data, the information as which 2 was inputted, and the result of an operation, and 3 giving an instruction, and 4 are floppy disks (henceforth FD) which are a write-in means slack floppy disk drive (henceforth FDD), and the storage which 5 can exchange.

[0018] Drawing 3 is the block diagram showing the detail of the data-processing section 1. A data processor 1 Processing of a program execution and data, An operation CPU10 to perform, As temporary storage of ROM11 the control program, the peculiar information on the equipment, etc. are beforehand remembered to be, DMAC (direct memory access controller)12 which controls delivery of the data of an external connection device and DRAM13, and data, or a work area at the time of a program execution With the video-signal processing circuit 15 and the battery 17 which process the data outputted to the video interface 14 for connecting DRAM13 and CRT2 which are used, and CRT2 It consists of the SCSI interface 19 and the keyboard interface 20 for connecting SRAM16 and the SCSI controller (SPC) 18 by which the content of storage is held, and FDD4. In addition, CPU10 also plays a role of the comparison means in this invention, an access prohibition means, and an encryption means.

[0019] Drawing 4 is the memory map of this information processor, and ROM field, I/O field, RAM field, the register field, and VRAM field are assigned from the low order side (0th street) of the address. Drawing 5 is a part of content of ROM field of memory in drawing 4, and data called the serial number "00001234" as a peculiar information are stored in the 100th street. The value different for every one equipment is set beforehand, and an user cannot rewrite this data. Drawing 6 is the content of the specific field in FD5 (for example, the 1st truck), and the serial number different for every one FD is beforehand memorized by the sector 1 (here 01005555). Moreover, a sector 2 is an area for writing in the peculiar information on the mainframe of equipment. The data "10 million" in which it is shown that drawing 6 is an initial state which is not yet accessed once, and is not accessed in this phase are memorized.

[0020] Next, an operation of this example is explained with reference to the flow chart of drawing 1. If there is an access instruction of FD5 at step S1 first, FDD4 reads a peculiar information (all over drawing, it is written as a "number") from the 1 sector truck 2 in FD5 (step S2), and CPU10 will read a peculiar information from the 100th street of ROM11 continuously (step S3). Next, it judges whether the peculiar information read from FD5 in step S4 is "10 million." If it is "10 million", since the FD5 does not have the career accessed in the past, it will progress to step S9, FDD4 will write the peculiar information "00001234" read from ROM11 in the sector 2 of FD5, and it will permit and perform an access (steps S6 and S7). The status of FD5 at this time is shown in drawing 7. This shows henceforth that FD5 is accessed by the equipment with the peculiar information of "00001234."

[0021] In step S4, when it was not "10 million", FD5 would be accessed with some equipment in the past. In this case, it progresses to step S5 and judges whether the peculiar information read from FD5 and the peculiar information read from ROM11 are in agreement. If both are in agreement, since FD5 will be used by the same equipment as before, it will permit and perform an access (steps S6 and S7). However, since FD5 tends to be used with the equipment different from before when both are not in agreement at step S5, an access is forbidden in that case and this routine is ended.

[0022] Thus, since it forbids an access in making the peculiar information on a mainframe memorize in FD, comparing the peculiar information in FD with the peculiar information in a mainframe at the time of a future access and not being in agreement when accessing FD first, it can prevent using the same FD with two or more equipments.

[0023] Next, other examples of this invention are explained. Drawing 8 shows the content of the specific field in FD5 in this example (for example, truck 1), and the serial number of FD5 and the peculiar information (serial number) on a mainframe are recorded like the example of the above [the sector 1 and the sector 2]. Prohibition information data are recorded by the sector 3, and when an access except the equipment which accessed first is not performed (that is, there is no unjust use), "00000000" is recorded like drawing 8.

However, when an unjust access tends to be performed also at once, "10000001" is recorded by the sector 3 as shown in drawing 9.

[0024] An operation of this example is explained with reference to the flow chart of drawing 10. In addition, the same step number is given to the same processing as drawing 9. If there is an access instruction of FD5 at step S1 first, the prohibition information data (all over drawing, it is written as prohibition data) of a sector 3 will be read at step S10. next, if it judges and differs [whether this data is "00000000" and] at step S11, if there is use unjust in the past namely, a routine will be ended as it is If prohibition information data are "00000000", the peculiar information in FD5 and a mainframe is read and compared like the above-mentioned example, and an access will be permitted and performed if in agreement. "10000001" which means access prohibition as prohibition information data is written in a sector 3 at the same time it forbids an access, since unjust use tends to be carried out when both are not in agreement (step S12).

[0025] It becomes impossible that thus, record in FD the data in which it is shown that it was going to use the same FD with different equipment, and no equipment uses after it FD which it was going to use [once or] unjustly by reading and judging this data when it is going to access FD.

[0026] Next, the example of further others of this invention is explained with reference to the flow chart of drawing 11. In addition, the same step number is given to the same processing as drawing 1. In this example, the peculiar information (serial number) recorded by the sector 2 of FD5 is enciphered according to the fixed rule. Then, if there is an access instruction of FD5 at step S1 first, after reading a peculiar information (serial number) from the sector 2 of FD5 at step S2, the inverse transformation of this will be carried out to the information on original at step S20. The peculiar information read from FD5 by this can be compared now with the peculiar information in mainframe ROM11. When the peculiar information which read from FD5 and carried out the inverse transformation is "10 million", since the FD5 does not have the career accessed in the past, after it enciphers the peculiar information read from mainframe ROM11 at step S21, it is written in the sector 2 of FD5 in step S9. For example, if it was set to "72619801" as a result of changing the peculiar information "00001234" on ROM11 according to a fixed rule, this value is written in the sector 2. By this, FD5 understands that there is already accessed career.

[0027] If in agreement as compared with the peculiar information which progressed to step S5 and was read from ROM11 when the peculiar information which read from FD5 and carried out the inverse transformation in step S4 is not "10 million", the access to FD5 is granted a permission and performed (steps S6 and S7), if not in agreement, an access will be forbidden and a routine (step S8) will be finished.

[0028] Thus, since the peculiar information is enciphered even if it is going to analyze FD5 by a certain technique and it is going to rewrite the content of a sector 2 by enciphering the peculiar information written in in FD according to a certain fixed rule, an unauthorized use becomes difficult.

[0029] Next, the example of further others is explained with reference to the flow chart of drawing 12. Although the peculiar information read from the inside of mainframe ROM11 was written in FD5 in the example mentioned above, the serial number currently beforehand recorded by the sector 1 of FD5 is stored in a mainframe in this example. If there is an access instruction of FD5 at step S1 first, the sector 1 and the sector 2 of FD5 will be read at step S30, and the serial number memorized by SRAM16 at step S31 will be read. Next, it judges whether the content read from the sector 2 at step S32 is "10 million." If it is "10 million", since FD5 does not have the career accessed in the past, it will progress to step S34, it will write the serial number read from the sector 1 in SRAM16, will rewrite a sector 2 to "10000001" at step S35, and will permit and perform an access of FD5. Since SRAM16 is backed up by the battery 17, even if it turns off the power of equipment, the content does not disappear, but it can distinguish now henceforth that FD5 was accessed by the equipment.

[0030] When the content of a sector 2 was not "10 million", FD5 might be accessed in the past. It progresses to step S33 and the serial number read from the sector 1 is compared with the serial number read from mainframe SRAM16. if both are in agreement, since FD5 will be first accessed by the equipment — an access — authorization and execution — carrying out (steps S6 and S7) — when not in agreement, since FD5 is accessed by the beginning with other equipments, the access by the equipment is forbidden (step S8), and finishes this routine

[0031] Thus, when accessing FD first, SRAM of a mainframe is made to memorize the serial number currently recorded by FD, the serial number in FD is compared with the serial number in SRAM at the time of a future access, and since it forbids an access in not being in agreement, it can prevent using the same FD with two or more equipments.

[0032]

[Effect of the invention] As explained above, according to the information processor by this invention, at the time of the 1st access Or the peculiar information beforehand memorized by the exchangeable storage is stored in the mainframe of equipment. the storage which can exchange for the mainframe of equipment the peculiar information memorized beforehand — Since the access to a storage is forbidden when the peculiar information in a mainframe is compared with the peculiar information in a storage from the 2nd access and both are not in agreement It becomes impossible to use the same storage with two or more equipments, and the perusal and the alteration of the content (secret papers etc.) of storage of a storage by inaccurate use and the inaccurate third person of software can be prevented.

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TECHNICAL FIELD

[Field of the Invention] this invention relates to a use management of the storage in the information processor using the exchangeable storage of a word processor, a personal computer, etc.

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PRIOR ART

[Prior art] From the former, when supplying application software etc. to a personal computer etc., the storage that carrying and circulation of a floppy disk, a magneto-optic disk, etc. are easy and cheap is used. the case where such a storage is used — a purchaser — him, in order to prevent use by the user of an except, and the use on two or more equipments The number of times of installation, such as a hard disk, are recorded to a storage. are not made not to make installation more than the number of times of a convention perform, or The user information which records the user information to the storage at the time of first-time installation, and was recorded at the time of installation of the 2nd henceforth is displayed, it warned or the same information was made to input.

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EFFECT OF THE INVENTION

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TECHNICAL PROBLEM

[Object of the Invention] However, the same user was able to be able to install also with other users and equipments in the technique of recording the number of times of installation, if it is less than a number of times of a convention, and to install in two or more equipments by the technique of recording an user information.

[0004] Moreover, since the content was seen or rewritten also by whom when it had the same equipment or same software when the document created with the word processor was recorded to the above storages, there was a possibility of leading to a secret leakage. As this invention is made in view of the above-mentioned point and the same storage cannot be used with other information processors in the information processor using the storage in which the above exchange is possible, it aims at preventing an unauthorized use of software, a leakage of secret papers or the alteration by others of the content of storage, etc.

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MEANS

[The means for solving a technical problem] In the information processor which reads and processes data from an exchangeable storage in order that this invention may attain the above-mentioned purpose When equipped with a peculiar information storage means to memorize a peculiar information different for every one equipment, the write-in means written in the storage for which the peculiar information is exchangeable, and a storage, The comparison means in comparison with the peculiar information which reads the peculiar information memorized by the storage and is memorized by the above-mentioned peculiar information storage means is established.

[0006] Or it may be made a comparison means compare a reading means perform reading of the write-in means and the information which writes in an information to the exchangeable storage which made the information peculiar to a medium memorize beforehand, and a peculiar information storage means memorize the peculiar information read by the reading means with the peculiar information memorized by the peculiar information storage means and the peculiar information memorized by the aforementioned storage establishing.

[0007] Moreover, in each above-mentioned information processor, as a result of the comparison by the above-mentioned comparison means, when both the peculiar information is not in agreement, it is good to establish an access prohibition means to forbid the access to a storage.

[0008] Moreover, as a result of the comparison by the above-mentioned comparison means, when both the peculiar information is not in agreement, as for the write-in means in this information processor, it is good to have the means which writes an access prohibition information in a storage.

[0009] In this case, as for the access prohibition means in the above-mentioned information processor, it is good to have a means to forbid the access to the storage with which the above-mentioned access prohibition information was written in.

[0010] Moreover, in each above-mentioned information processor, you may be made to establish an encryption means to encipher in case the peculiar information memorized by the above-mentioned peculiar information storage means is written in a storage.

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OPERATION

[Operation] According to the 1st above-mentioned invention, an information peculiar to equipment can be given, the peculiar information can be written in a storage, and the storage can distinguish whether it is what was used with the information processor from next time by comparing both.

[0012] Moreover, according to the 2nd above-mentioned invention, an information peculiar to a medium can be given, the peculiar information can be written in the storage means in the mainframe of equipment, and the storage can distinguish whether it is what was used with the information processor from next time by comparing both.

[0013] Moreover, since according to the 3rd above-mentioned invention the access to the storage will be forbidden as a result of a comparison if both peculiar informations differ, the use of those other than a specific information processor can be prevented.

[0014] Moreover, since according to the 4th above-mentioned invention an access prohibition information will be written in the storage as a result of a comparison if both peculiar informations differ, it can distinguish whether the storage may be used by other information processors.

[0015] Moreover, since all accesses after receiving the storage with which the access prohibition information was written in are forbidden according to the 5th above-mentioned invention, it can avoid performing the access to the storage used unjustly also at once.

[0016] Moreover, since according to the 6th above-mentioned invention a peculiar information is enciphered and written in in case a peculiar information is written in a storage, it can prevent analyzing and rewriting a peculiar information.

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EXAMPLE

[Example] Hereafter, the example of this invention is concretely explained based on an accompanying drawing. Drawing 2 is the whole one example block diagram of the information processor by this invention. The keyboard for an user doing the direct input of a character, the numeric value, etc., or the display (henceforth CRT) which displays the data-processing section among which one in drawing performs an operation, radial transfer, etc. of data, the information as which 2 was inputted, and the result of an operation, and 3 giving an instruction, and 4 are floppy disks (henceforth FD) which are a write-in means slack floppy disk drive (henceforth FDD), and the storage which 5 can exchange.

[0018] Drawing 3 is the block diagram showing the detail of the data-processing section 1. A data processor 1 Processing of a program execution and data, An operation CPU10 to perform, As temporary storage of ROM11 the control program, the peculiar information on the equipment, etc. are beforehand remembered to be, DMAC (direct memory access controller)12 which controls delivery of the data of an external connection device and DRAM13, and data, or a work area at the time of a program execution With the video-signal processing circuit 15 and the battery 17 which process the data outputted to the video interface 14 for connecting DRAM13 and CRT2 which are used, and CRT2 It consists of the SCSI interface 19 and the keyboard interface 20 for connecting SRAM16 and the SCSI controller (SPC) 18 by which the content of storage is held, and FDD4. In addition, CPU10 also plays a role of the comparison means in this invention, an access prohibition means, and an encryption means.

[0019] Drawing 4 is the memory map of this information processor, and ROM field, I/O field, RAM field, the register field, and VRAM field are assigned from the low order side (0th street) of the address. Drawing 5 is a part of content of ROM field of memory in drawing 4, and data called the serial number "00001234" as a peculiar information are stored in the 100th street. The value different for every one equipment is set beforehand, and an user cannot rewrite this data. Drawing 6 is the content of the specific field in FD5 (for example, the 1st truck), and the serial number different for every one FD is beforehand memorized by the sector 1 (here 01005555). Moreover, a sector 2 is an area for writing in the peculiar information on the mainframe of equipment. The data "10 million" in which it is shown that drawing 6 is an initial state which is not yet accessed once, and is not accessed in this phase are memorized.

[0020] Next, an operation of this example is explained with reference to the flow chart of drawing 1. If there is an access instruction of FD5 at step S1 first, FDD4 reads a peculiar information (all over drawing, it is written as a "number") from the 1 sector truck 2 in FD5 (step S2), and CPU10 will read a peculiar information from the 100th street of ROM11 continuously (step S3). Next, it judges whether the peculiar information read from FD5 in step S4 is "10 million." If it is "10 million", since the FD5 does not have the career accessed in the past, it will progress to step S9, FDD4 will write the peculiar information "00001234" read from ROM11 in the sector 2 of FD5, and it will permit and perform an access (steps S6 and S7). The status of FD5 at this time is shown in drawing 7. This shows henceforth that FD5 is accessed by the equipment with the peculiar information of "00001234."

[0021] In step S4, when it was not "10 million", FD5 would be accessed with some equipment in the past. In this case, it progresses to step S5 and judges whether the peculiar information read from FD5 and the peculiar information read from ROM11 are in agreement. If both are in agreement, since FD5 will be used by the same equipment as before, it will permit and perform an access (steps S6 and S7). However, since FD5 tends to be used with the equipment different from before when both are not in agreement at step S5, an access is forbidden in that case and this routine is ended.

[0022] Thus, since it forbids an access in making the peculiar information on a mainframe memorize in FD, comparing the peculiar information in FD with the peculiar information in a mainframe at the time of a future access and not being in agreement when accessing FD first, it can prevent using the same FD with two or more equipments.

[0023] Next, other examples of this invention are explained. Drawing 8 shows the content of the specific field in FD5 in this example (for example, truck 1), and the serial number of FD5 and the peculiar information (serial number) on a mainframe are recorded like the example of the above [the sector 1 and the sector 2]. Prohibition information data are recorded by the sector 3, and when an access except the equipment which accessed first is not performed (that is, there is no unjust use), "00000000" is recorded like drawing 8. However, when an unjust access tends to be performed also at once, "10000001" is recorded by the sector 3 as shown in drawing 9.

[0024] An operation of this example is explained with reference to the flow chart of drawing 10. In addition, the

same step number is given to the same processing as drawing 9. If there is an access instruction of FD5 at step S1 first, the prohibition information data (all over drawing, it is written as prohibition data) of a sector 3 will be read at step S10. next, if it judges and differs [whether this data is "00000000" and] at step S11, if there is use unjust in the past namely,, a routine will be ended as it is. If prohibition information data are "00000000", the peculiar information in FD5 and a mainframe is read and compared like the above-mentioned example, and an access will be permitted and performed if in agreement. "10000001" which means access prohibition as prohibition information data is written in a sector 3 at the same time it forbids an access, since unjust use tends to be carried out when both are not in agreement (step S12).

[0025] It becomes impossible that thus, record in FD the data in which it is shown that it was going to use the same FD with different equipment, and no equipment uses after it FD which it was going to use [once or] unjustly by reading and judging this data when it is going to access FD.

[0026] Next, the example of further others of this invention is explained with reference to the flow chart of drawing 11. In addition, the same step number is given to the same processing as drawing 1. In this example, the peculiar information (serial number) recorded by the sector 2 of FD5 is enciphered according to the fixed rule. Then, if there is an access instruction of FD5 at step S1 first, after reading a peculiar information (serial number) from the sector 2 of FD5 at step S2, the inverse transformation of this will be carried out to the information on original at step S20. The peculiar information read from FD5 by this can be compared now with the peculiar information in mainframe ROM11. When the peculiar information which read from FD5 and carried out the inverse transformation is "10 million", since the FD5 does not have the career accessed in the past, after it enciphers the peculiar information read from mainframe ROM11 at step S21, it is written in the sector 2 of FD5 in step S9. For example, if it was set to "72619801" as a result of changing the peculiar information "00001234" on ROM11 according to a fixed rule, this value is written in the sector 2. By this, FD5 understands that there is already accessed career.

[0027] If in agreement as compared with the peculiar information which progressed to step S5 and was read from ROM11 when the peculiar information which read from FD5 and carried out the inverse transformation in step S4 is not "10 million", the access to FD5 is granted a permission and performed (steps S6 and S7), if not in agreement, an access will be forbidden and a routine (step S8) will be finished.

[0028] Thus, since the peculiar information is enciphered even if it is going to analyze FD5 by a certain technique and it is going to rewrite the content of a sector 2 by enciphering the peculiar information written in FD according to a certain fixed rule, an unauthorized use becomes difficult.

[0029] Next, the example of further others is explained with reference to the flow chart of drawing 12.

Although the peculiar information read from the inside of mainframe ROM11 was written in FD5 in the example mentioned above, the serial number currently beforehand recorded by the sector 1 of FD5 is stored in a mainframe in this example. If there is an access instruction of FD5 at step S1 first, the sector 1 and the sector 2 of FD5 will be read at step S30, and the serial number memorized by SRAM16 at step S31 will be read. Next, it judges whether the content read from the sector 2 at step S32 is "10 million." If it is "10 million", since FD5 does not have the career accessed in the past, it will progress to step S34, it will write the serial number read from the sector 1 in SRAM16, will rewrite a sector 2 to "10000001" at step S35, and will permit and perform an access of FD5. Since SRAM16 is backed up by the battery 17, even if it turns off the power of equipment, the content does not disappear, but it can distinguish now henceforth that FD5 was accessed by the equipment.

[0030] When the content of a sector 2 was not "10 million", FD5 might be accessed in the past. It progresses to step S33 and the serial number read from the sector 1 is compared with the serial number read from mainframe SRAM16. if both are in agreement, since FD5 will be first accessed by the equipment — an access — authorization and execution — carrying out (steps S6 and S7) — when not in agreement, since FD5 is accessed by the beginning with other equipments, the access by the equipment is forbidden (step S8), and finishes this routine

[0031] Thus, when accessing FD first, SRAM of a mainframe is made to memorize the serial number currently recorded by FD, the serial number in FD is compared with the serial number in SRAM at the time of a future access, and since it forbids an access in not being in agreement, it can prevent using the same FD with two or more equipments.

[Translation done.]

* NOTICES *

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DESCRIPTION OF DRAWINGS

[An easy explanation of a drawing]

[Drawing 1] It is the flow chart which shows processing at the time of FD access by the information processor of one example of this invention.

[Drawing 2] It is the whole information-processor block block diagram by this invention.

[Drawing 3] It is the block block diagram showing the detailed configuration of a data processor 1 shown in drawing 2.

[Drawing 4] It is drawing showing the memory map of the information processor by this invention.

[Drawing 5] It is drawing showing the content of ROM shown in drawing 4.

[Drawing 6] It is drawing showing the content of the specific field in FD.

[Drawing 7] It is drawing showing other content of the specific field in FD.

[Drawing 8] It is drawing showing the content of further others of the specific field in FD.

[Drawing 9] It is drawing showing other content of the specific field in FD further again.

[Drawing 10] It is the flow chart which shows processing at the time of FD access by the information processor of other examples of this invention.

[Drawing 11] It is the flow chart which shows processing at the time of FD access by the information processor of the example of further others of this invention.

[Drawing 12] It is the flow chart which shows processing at the time of FD access by the information processor of other examples further again of this invention.

[An explanation of a sign]

1: Data processor 2:CRT display

3: Keyboard 4:floppy disk drive

5: Floppy disk 10:CPU

11:ROM 16:SRAM

17: Backup battery

[Translation done.]

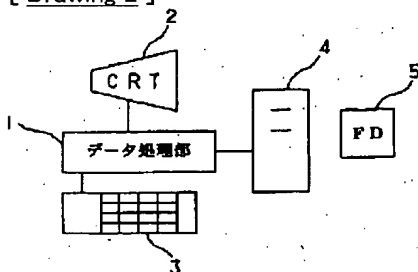
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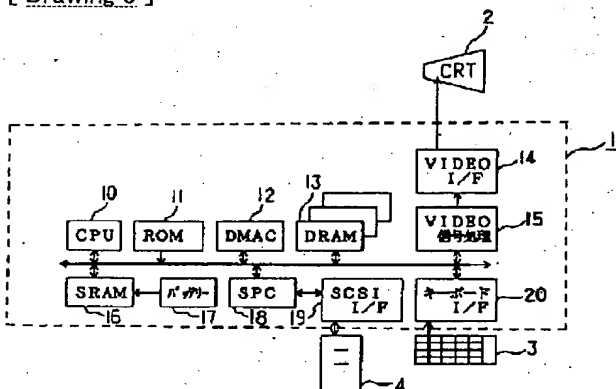
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DRAWINGS

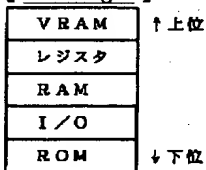
[Drawing 2]



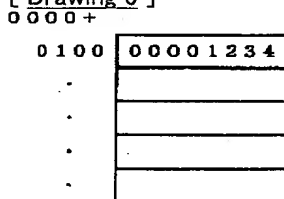
[Drawing 3]



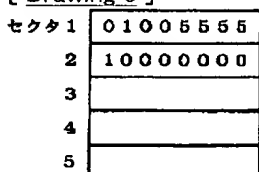
[Drawing 4]



[Drawing 5]



[Drawing 6]

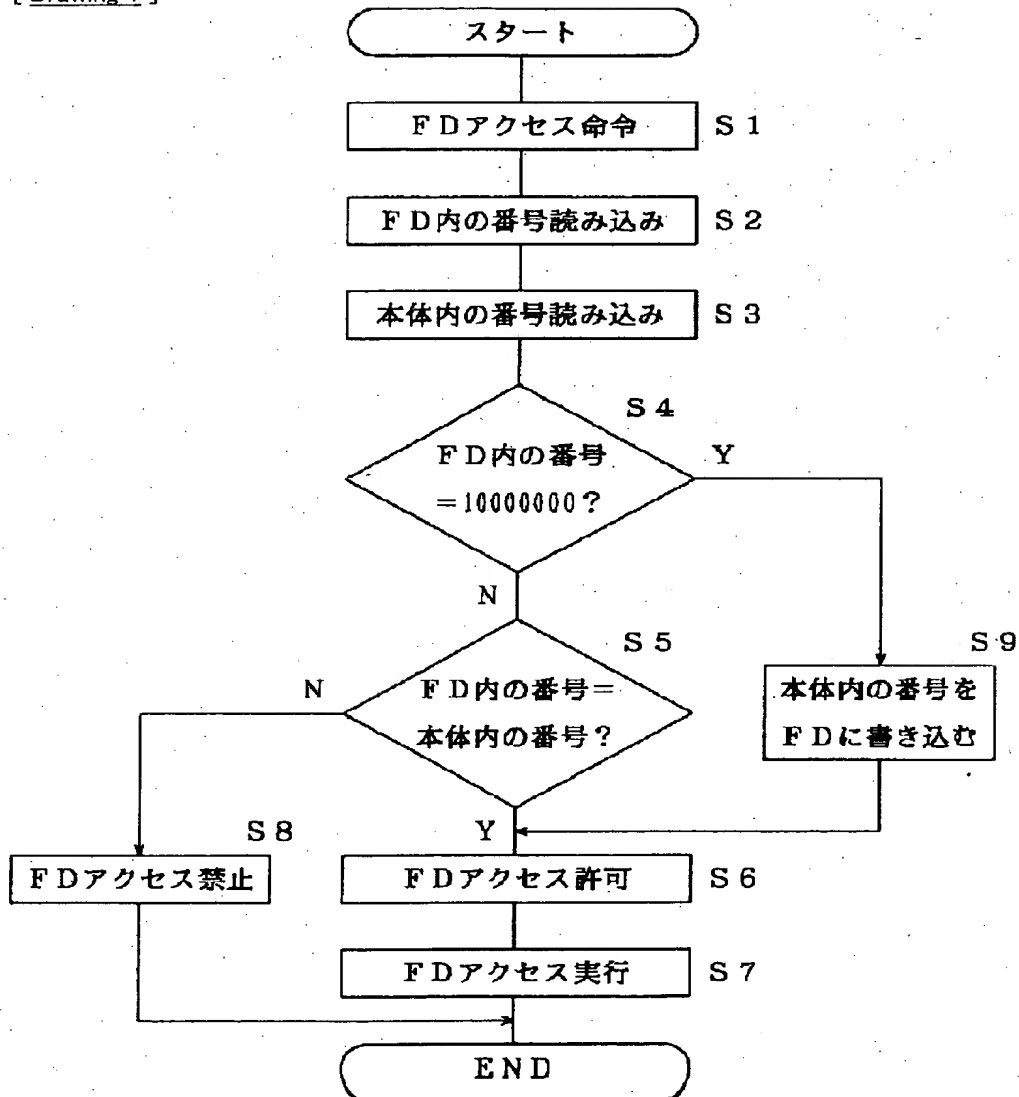


[Drawing 7]

セクタ1	01005555
2	00001234
3	
4	
5	

セクタ1	01005555
2	00001234
3	00000000
4	
5	

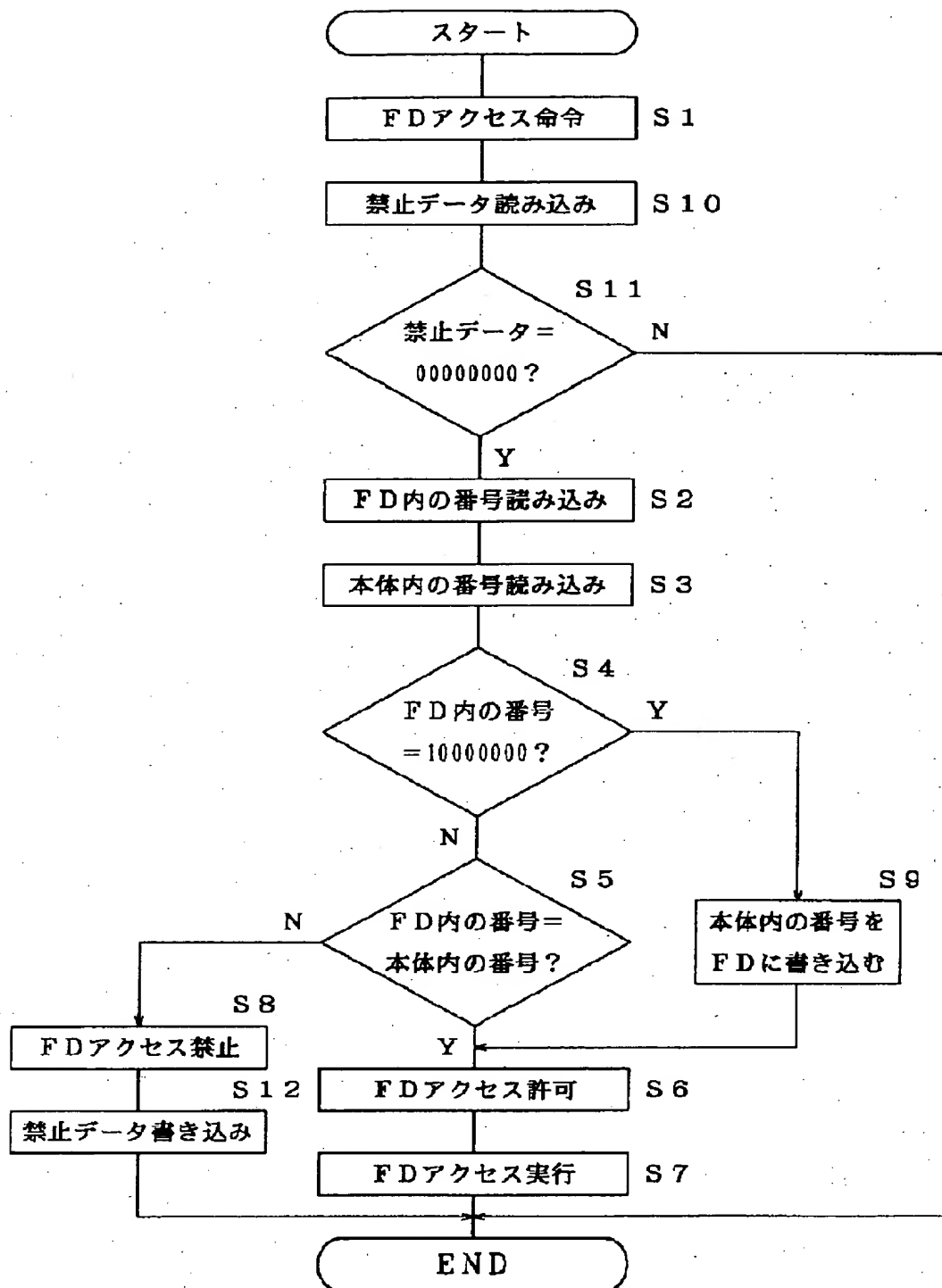
[Drawing 1]



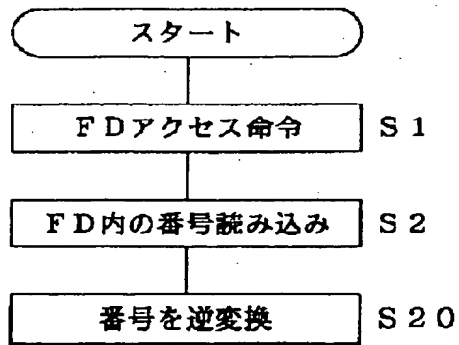
[Drawing 9]

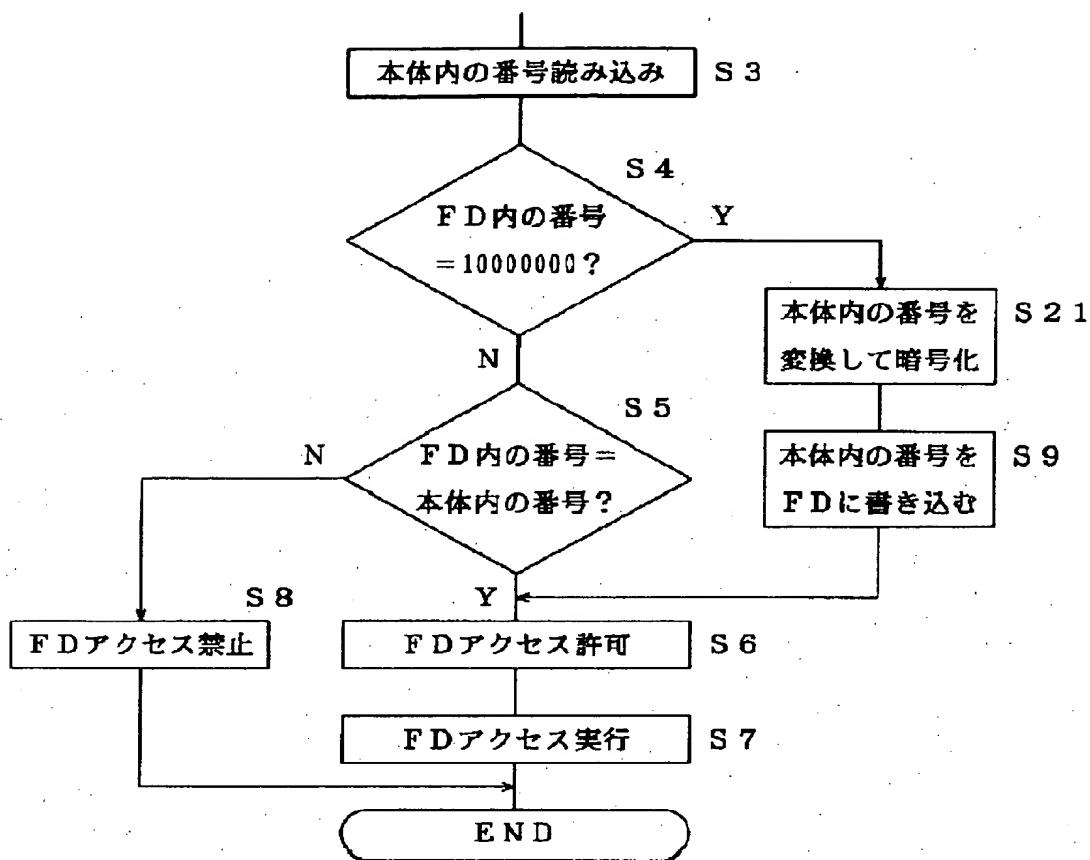
セクタ1	01005555
2	00001234
3	10000001
4	
5	

[Drawing 10]

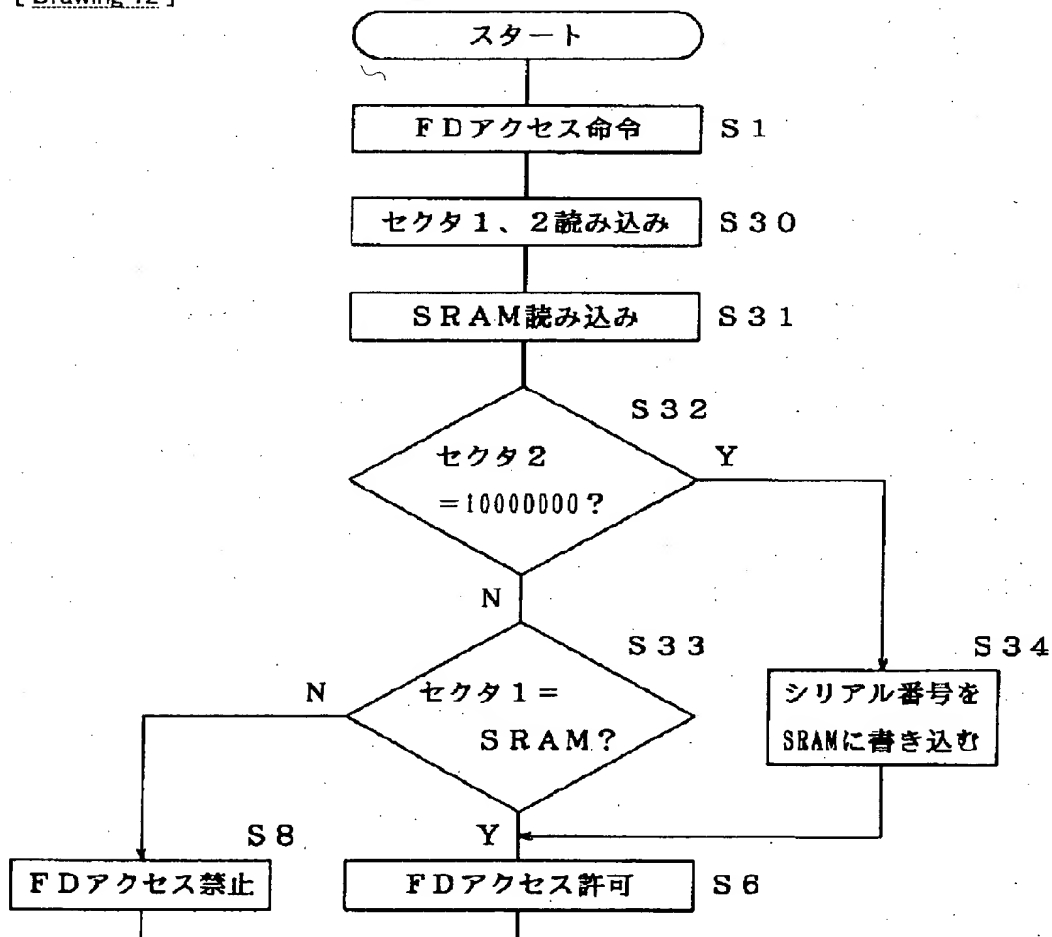


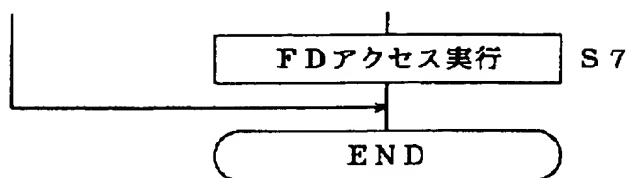
[Drawing 11]





[Drawing 12]





[Translation done.]

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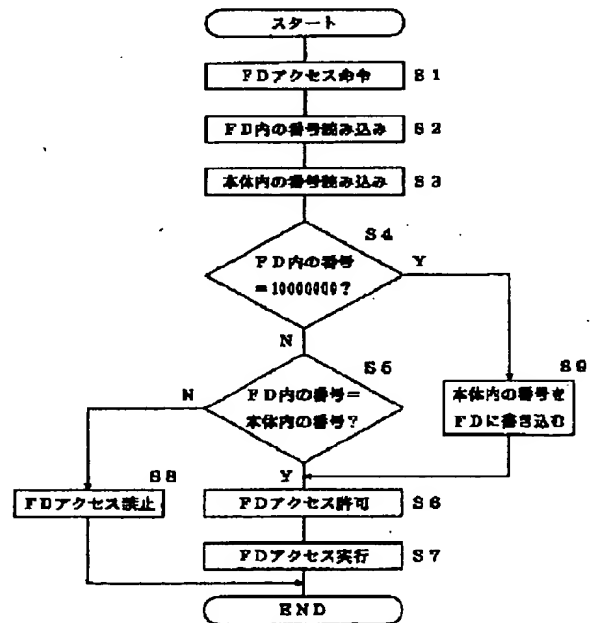
会社リコー内

(54) 【発明の名称】 情報処理装置

(57) 【要約】

【目的】 交換可能な記憶媒体を用いる情報処理装置において、同一記憶媒体の複数装置での使用を禁止し、ソフトウェアの不正使用や機密情報の漏洩、改竄を防止する。

【構成】 記憶媒体又は装置本体内のROMに予め固有情報を記憶させておき、記憶媒体への最初のアクセス時に固有情報を装置本体内のSRAM又は記憶媒体中の特定領域に書き込み、2回目以降のアクセス時には記憶媒体の固有情報と装置本体の固有情報とを比較し、両者が一致しなかった場合にはアクセスを禁止する。



【特許請求の範囲】

【請求項1】 交換可能な記憶媒体からデータを読み取って処理する情報処理装置において、装置1台毎に異なる固有情報を記憶する固有情報記憶手段と、前記固有情報を前記交換可能な記憶媒体に書き込む書き込み手段と、前記記憶媒体が装着されたとき、該記憶媒体に記憶されている固有情報を読み出して前記固有情報記憶手段に記憶されている固有情報と比較する比較手段とを設けたことを特徴とする情報処理装置。

【請求項2】 媒体固有の情報を予め記憶させた交換可能な記憶媒体に対し情報の書き込みを行う書き込み手段及び情報の読み込みを行う読み込み手段と、該読み込み手段によって読み込まれた固有情報を記憶する固有情報記憶手段と、該固有情報記憶手段に記憶されている固有情報と前記記憶媒体に記憶されている固有情報とを比較する比較手段とを設けたことを特徴とする情報処理装置。

【請求項3】 前記比較手段による比較の結果、両固有情報が一致しない場合には記憶媒体へのアクセスを禁止するアクセス禁止手段を設けたことを特徴とする請求項1又は2記載の情報処理装置。

【請求項4】 前記書き込み手段は、前記比較手段による比較の結果、両固有情報が一致しない場合には記憶媒体へアクセス禁止情報を書き込む手段を有することを特徴とする請求項3記載の情報処理装置。

【請求項5】 前記アクセス禁止手段は、前記アクセス禁止情報が書き込まれた記憶媒体へのアクセスを禁止する手段を有することを特徴とする請求項4記載の情報処理装置。

【請求項6】 前記固有情報記憶手段に記憶された固有情報を記憶媒体に書き込む際に暗号化する暗号化手段を設けたことを特徴とする請求項1及至5のいずれか一項に記載の情報処理装置。

【発明の詳細な説明】

【0001】

【産業上の利用分野】 本発明は、ワードプロセッサ、パーソナルコンピュータ等の交換可能な記憶媒体を用いる情報処理装置における記憶媒体の使用管理に関する。

【0002】

【従来の技術】 従来から、パーソナルコンピュータ等にアプリケーションソフト等を提供する場合には、フロッピディスクや光磁気ディスク等の、持ち運びや流通が容易で安価な記憶媒体が用いられている。このような記憶媒体を用いる場合には、購入者本人以外のユーザによる使用や複数の装置上での使用を防止するため、ハードディスク等へのインストール回数を記憶媒体に記録して規定回数以上のインストールを行わせないようにしたり、初回のインストール時にユーザ情報を記憶媒体に記録しておいて2回目以降のインストール時には記録したユーザ情報を表示して警告を行ったり、同じ情報を入力させ

たりしていた。

【0003】

【発明が解決しようとする課題】 しかしながら、インストール回数を記録する方法では規定回数以内ならば他のユーザや装置でもインストール可能であり、ユーザ情報を記録する方法では同一ユーザが複数の装置にインストールすることが可能であった。

【0004】 また、ワードプロセッサで作成した文書を上記のような記憶媒体に記録したような場合には、同じ装置或いはソフトウェアをもっていれば誰でも内容を見たり書き換えたりできるので、機密の漏洩につながる恐れがあった。本発明は上記の点に鑑みてなされたものであり、上述のような交換可能な記憶媒体を用いる情報処理装置において、同一の記憶媒体を他の情報処理装置では使用できないようにして、ソフトウェアの不正使用や、機密文書の漏洩あるいは記憶内容の他人による改変などを防止することを目的とする。

【0005】

【課題を解決するための手段】 本発明は上記の目的を達成するため、交換可能な記憶媒体からデータを読み取って処理する情報処理装置において、装置1台毎に異なる固有情報を記憶する固有情報記憶手段と、その固有情報を交換可能な記憶媒体に書き込む書き込み手段と、記憶媒体が装着されたとき、その記憶媒体に記憶されている固有情報を読み出して上記固有情報記憶手段に記憶されている固有情報と比較する比較手段とを設けたものである。

【0006】 或いは、媒体固有の情報を予め記憶させた交換可能な記憶媒体に対し情報の書き込みを行う書き込み手段及び情報の読み込みを行う読み込み手段と、その読み込み手段によって読み込まれた固有情報を記憶する固有情報記憶手段と、その固有情報記憶手段に記憶された固有情報と前記記憶媒体に記憶された固有情報とを比較する比較手段とを設けるようにしてもよい。

【0007】 また、上記各情報処理装置において、上記比較手段による比較の結果、両固有情報が一致しない場合には記憶媒体へのアクセスを禁止するアクセス禁止手段を設けるとよい。

【0008】 また、この情報処理装置における書き込み手段は、上記比較手段による比較の結果、両固有情報が一致しない場合には記憶媒体へアクセス禁止情報を書き込む手段を有するとよい。

【0009】 その場合、上記情報処理装置におけるアクセス禁止手段は、上記アクセス禁止情報が書き込まれた記憶媒体へのアクセスを禁止する手段を有するとよい。

【0010】 また、上記各情報処理装置において、上記固有情報記憶手段に記憶された固有情報を記憶媒体に書き込む際に暗号化する暗号化手段を設けるようにしてもよい。

【0011】

【作用】上記第1の発明によれば、装置に固有の情報をもたせ、その固有情報を記憶媒体に書き込み、次回からは両者を比較することにより、その記憶媒体がその情報処理装置で使用されたものかどうか判別することができる。

【0012】また、上記第2の発明によれば、媒体に固有の情報をもたせ、その固有情報を装置本体内の記憶手段に書き込み、次回からは両者を比較することにより、その記憶媒体がその情報処理装置で使用されたものかどうか判別することができる。

【0013】また、上記第3の発明によれば、比較の結果、両固有情報が異なっていればその記憶媒体へのアクセスを禁止するので、特定の情報処理装置以外での使用を防止することができる。

【0014】また、上記第4の発明によれば、比較の結果、両固有情報が異なっていればその記憶媒体へアクセス禁止情報を書き込むので、その記憶媒体が他の情報処理装置で使われたことがあるかどうか判別することができる。

【0015】また、上記第5の発明によれば、アクセス禁止情報の書き込まれた記憶媒体に対しては以後のアクセスを全て禁止するので、一度でも不正に使用された記憶媒体に対するアクセスを行えないようにすることができる。

【0016】また、上記第6の発明によれば、固有情報を記憶媒体に書き込む際に固有情報を暗号化して書き込むので、固有情報を解析して書き換えることを防止することができる。

【0017】

【実施例】以下、この発明の実施例を添付図面に基づいて具体的に説明する。図2は本発明による情報処理装置の一実施例の全体ブロック構成図である。図中1はデータの演算や入出力処理等を行うデータ処理部、2は入力された情報や演算結果を表示するディスプレイ（以下、CRTという）、3は文字や数値等をユーザが直接入力し、或いは命令を与えるためのキーボード、4は書き込み手段たるフロッピディスクドライブ（以下、FDDという）、5は交換可能な記憶媒体であるフロッピディスク（以下、FDという）である。

【0018】図3はデータ処理部1の詳細を示すブロック構成図である。データ処理装置1は、プログラムの実行やデータの処理、演算を行うCPU10、制御プログラムやその装置の固有情報等が予め記憶されているROM11、外部接続機器とDRAM13とのデータの受け渡しを制御するDMAC（ダイレクト・メモリ・アクセス・コントローラ）12、データの一時的記憶やプログラム実行時のワークエリアとして使われるDRAM13、CRT2をつなぐためのビデオインタフェース14、CRT2に出力するデータの処理を行うビデオ信号処理回路15、バッテリー17によって記憶内容が保持さ

れるSRAM16、SCSIコントローラ（SPC）18、FDD4をつなぐためのSCSIインタフェース19、及びキーボードインタフェース20より構成される。なおCPU10は、この発明における比較手段、アクセス禁止手段、暗号化手段としての役割をも果たすものである。

【0019】図4はこの情報処理装置のメモリマップであり、アドレスの下位側（0番地）からROM領域、I/O領域、RAM領域、レジスタ領域、VRAM領域が割り当てられている。図5は図4におけるROM領域のメモリ内容の一部であり、100番地には固有情報としてのシリアル番号「00001234」というデータが格納されている。このデータは装置1台毎に異なる値が予めセットされており、ユーザが書き換えることはできない。図6はFDD5内の特定領域（例えば第1トラック）の内容であり、セクタ1には、FDD1枚毎に異なるシリアル番号が予め記憶されている（ここでは01005555）。またセクタ2は装置本体の固有情報を書き込むためのエリアである。図6はまだ1度もアクセスされていない初期状態であり、この段階ではアクセスされていないことを示すデータ「10000000」が記憶されている。

【0020】次に、この実施例の動作を図1のフローチャートを参照して説明する。まずステップS1にてFDD5のアクセス命令があると、FDD4はFDD5内のトラック1セクタ2から固有情報（図中では「番号」と表記）を読み込み（ステップS2）、続いてCPU10はROM11の100番地から固有情報を読み込む（ステップS3）。次に、ステップS4にてFDD5から読み込んだ固有情報が「10000000」であるか否かを判定する。「10000000」であれば、そのFDD5は過去にアクセスされた経歴がないのであるから、ステップS9に進み、ROM11から読み込んだ固有情報「00001234」をFDD4がFDD5のセクタ2に書き込み、アクセスを許可・実行する（ステップS6、S7）。このときのFDD5の状態を図7に示す。これによって以後、FDD5は「00001234」という固有情報をもつ装置によってアクセスされたものであることが分かる。

【0021】ステップS4にて「10000000」でなかった場合には、FDD5は過去にどこかの装置でアクセスされたものであることになる。その場合はステップS5に進み、FDD5から読み込んだ固有情報とROM11から読み込んだ固有情報が一致するか否かを判定する。両者が一致すれば、FDD5は以前と同一の装置で使われることになるからアクセスを許可・実行する（ステップS6、S7）。しかし、ステップS5にて両者が一致しなかった場合には、FDD5を以前とは異なる装置でしようとしていることになるから、その場合にはアクセスを禁止し、このルーチンを終了する。

【0022】このように、FDを最初にアクセスするときに本体の固有情報をFD内に記憶させ、以後のアクセス時にはFD内の固有情報と本体内の固有情報を比較して一致しない場合にはアクセスを禁止するので、同一FDを複数の装置で使用することを防止できる。

【0023】次に、この発明の他の実施例について説明する。図8はこの実施例におけるFD5内の特定領域（例えばトラック1）の内容を示したものであり、セクタ1及びセクタ2は上記の実施例と同様に、FD5のシリアル番号と本体の固有情報（シリアル番号）が記録されている。セクタ3には禁止情報データが記録されており、最初にアクセスした装置以外でのアクセスが行われていない（即ち、不正な使用がない）場合には、図8のように「00000000」が記録されている。しかし、一度でも不正なアクセスが行われようとした場合には、図9に示すようにセクタ3に「10000001」が記録される。

【0024】この実施例の動作を図10のフローチャートを参照して説明する。なお、図9と同じ処理には同一のステップ番号を付してある。まずステップS1にてFD5のアクセス命令があると、ステップS10にてセクタ3の禁止情報データ（図中では禁止データと表記）を読み込む。次にステップS11で、このデータが「00000000」であるか否かを判定し、異なれば（即ち、過去に不正な使用があれば）そのままルーチンを終了する。禁止情報データが「00000000」であれば、上記の実施例と同様にFD5内と本体内の固有情報を読み込んで比較し、一致すればアクセスを許可・実行する。両者が一致しなかった場合には不正な使用をしようとしていることになるので、アクセスを禁止すると同時に、セクタ3に禁止情報データとしてアクセス禁止を意味する「10000001」を書き込む（ステップS12）。

【0025】このように、同一のFDを異なる装置でしようとしたことを示すデータをFD内に記録しておき、FDにアクセスしようとしたときにこのデータを読み込んで判定することにより、一度でも不正にしようとしたFDはそれ以後、どの装置でも使うことができなくなる。

【0026】次に、この発明の更に他の実施例について図11のフローチャートを参照して説明する。なお、図1と同じ処理には同じステップ番号を付してある。この実施例では、FD5のセクタ2に記録される固有情報（シリアル番号）は、一定の規則に従って暗号化されている。そこで、まずステップS1にてFD5のアクセス命令があると、ステップS2にてFD5のセクタ2から固有情報（シリアル番号）を読み出した後、ステップS20でこれを元の情報に逆変換する。これによってFD5から読み込んだ固有情報と本体ROM11内の固有情報とを比較することができるようになる。FD5から読

み込み逆変換した固有情報が「10000000」であった場合は、そのFD5は過去にアクセスされた経歴がないのであるから、ステップS21にて本体ROM11から読み込んだ固有情報を暗号化した後、ステップS9にてFD5のセクタ2に書き込む。例えば、ROM11の固有情報「00001234」を一定の規則に従って変換した結果「72619801」になったとすれば、この値をセクタ2に書き込んでおく。これによって、FD5は既にアクセスされた経歴があることが分かる。

【0027】ステップS4にてFD5から読み込み逆変換した固有情報が「10000000」でなかった場合には、ステップS5に進みROM11から読み込んだ固有情報と比較し、一致すればFD5へのアクセスを許可・実行し（ステップS6、S7）、一致しなければアクセスを禁止して（ステップS8）ルーチンを終える。

【0028】このように、FD内に書き込む固有情報がある一定の規則に従って暗号化しておくことにより、何らかの方法でFD5を解析しセクタ2の内容を書き換えようとしても、固有情報が暗号化されているので不正使用が困難になる。

【0029】次に、更に他の実施例について図12のフローチャートを参照して説明する。上述した実施例では本体ROM11内から読み込んだ固有情報をFD5に書き込んだが、この実施例では、FD5のセクタ1に予め記録されているシリアル番号を本体に記憶させる。まずステップS1にてFD5のアクセス命令があると、ステップS30でFD5のセクタ1とセクタ2を読み込み、ステップS31でSRAM16に記憶されているシリアルナンバーを読み込む。次にステップS32にてセクタ2から読み込んだ内容が「10000000」であるか否かを判定する。「10000000」であれば、FD5は過去にアクセスされた経歴がないのでステップS34に進み、セクタ1から読み込んだシリアル番号をSRAM16に書き込み、ステップS35にてセクタ2を「10000001」に書き換えて、FD5のアクセスを許可・実行する。SRAM16はバッテリー17によってバックアップされるので、装置の電源を切っても内容は消えず、以後、その装置によってFD5がアクセスされたことを判別できるようになる。

【0030】セクタ2の内容が「10000000」でなかった場合は、FD5は過去にアクセスされたことがあることになる。ステップS33に進み、セクタ1から読み込んだシリアル番号と本体SRAM16から読み込んだシリアル番号を比較する。両者が一致すれば、FD5はその装置によって最初にアクセスされたものであるから、アクセスを許可・実行する（ステップS6、S7）が、一致しなかった場合は、FD5は最初に他の装置によってアクセスされたものであるから、その装置によるアクセスは禁止し（ステップS8）、このルーチンを終える。

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【0031】このように、FDを最初にアクセスするときにFDに記録されているシリアル番号を本体のSRAMに記憶させ、以後のアクセス時にはFD内のシリアル番号とSRAM内のシリアル番号を比較して、一致しない場合にはアクセスを禁止するので、同一FDを複数の装置で使用することを防止できる。

【0032】

【発明の効果】以上説明してきたように、本発明による情報処理装置によれば、1回目のアクセス時に、装置本体に予め記憶されている固有情報を交換可能な記憶媒体に、或いは交換可能な記憶媒体に予め記憶されている固有情報を装置本体に記憶させ、2回目のアクセスからは本体内の固有情報と記憶媒体内の固有情報とを比較して、両者が一致しない場合には記憶媒体へのアクセスを禁止するので、同一の記憶媒体を複数の装置で使うことができなくなり、ソフトウェアの不正な使用や第三者による記憶媒体の記憶内容（機密文書等）の閲覧や改竄を防止することができる。

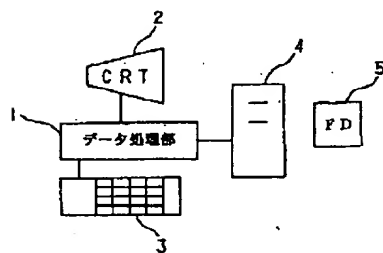
【図面の簡単な説明】

【図1】本発明の一実施例の情報処理装置によるFDアクセス時の処理を示すフローチャートである。

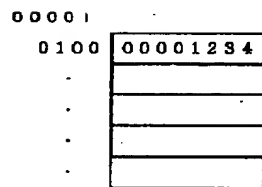
【図2】本発明による情報処理装置の全体ブロック構成図である。

【図3】図2に示したデータ処理装置1の詳細構成を示すブロック構成図である。

【図2】



【図5】



【図6】

セクタ1	01005555
2	10000000
3	
4	
5	

【図7】

セクタ1	01005555
2	00001234
3	
4	
5	

セクタ1	01005555
2	00001234
3	00000000
4	
5	

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【図4】本発明による情報処理装置のメモリマップを示す図である。

【図5】図4に示したROMの内容を示す図である。

【図6】FD内の特定領域の内容を示す図である。

【図7】FD内の特定領域の他の内容を示す図である。

【図8】FD内の特定領域の更に他の内容を示す図である。

【図9】FD内の特定領域の更にまた他の内容を示す図である。

【図10】本発明の他の実施例の情報処理装置によるFDアクセス時の処理を示すフローチャートである。

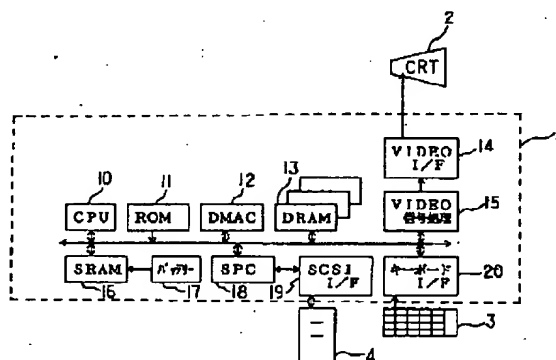
【図11】本発明の更に他の実施例の情報処理装置によるFDアクセス時の処理を示すフローチャートである。

【図12】本発明の更にまた他の実施例の情報処理装置によるFDアクセス時の処理を示すフローチャートである。

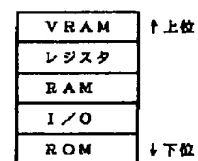
【符号の説明】

- | | |
|------------------|------------------|
| 1 : データ処理装置 | 2 : CRTディスプレイ |
| 3 : キーボード | 4 : フロッピディスクドライブ |
| 5 : フロッピディスク | 10 : CPU |
| 11 : ROM | 16 : SRAM |
| 17 : バックアップバッテリー | |

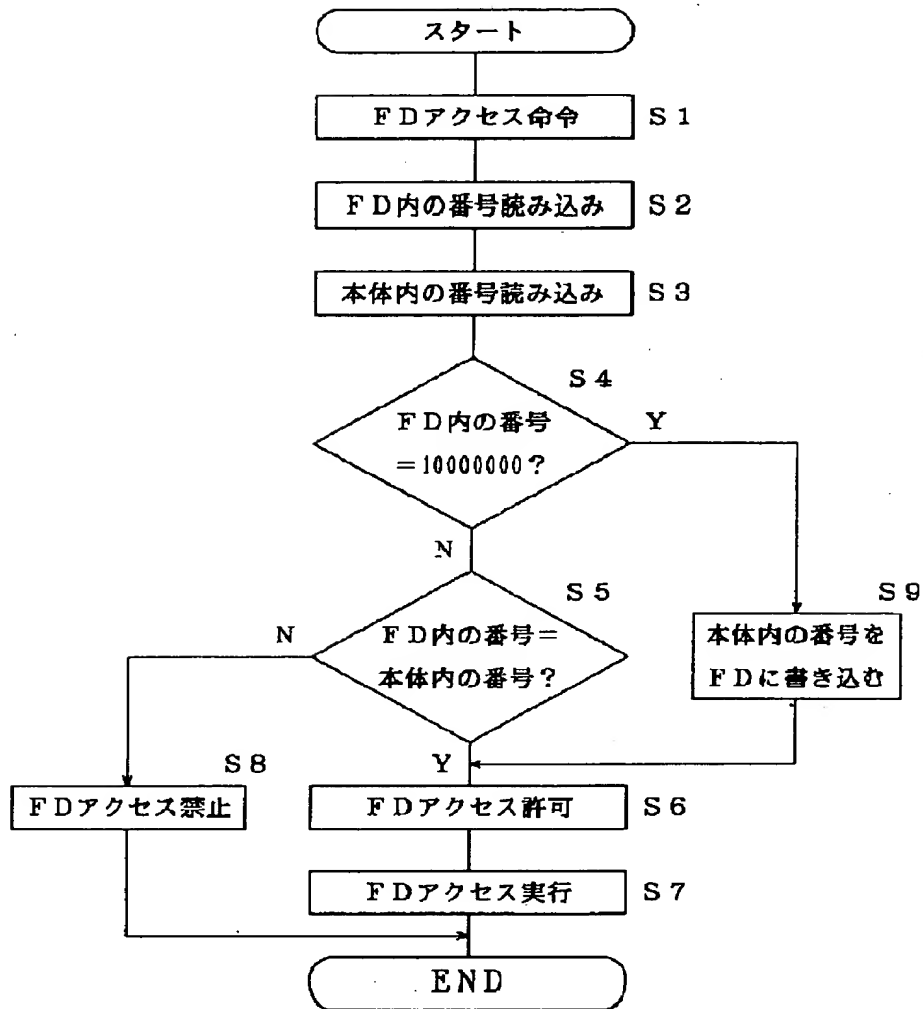
【図3】



【図4】



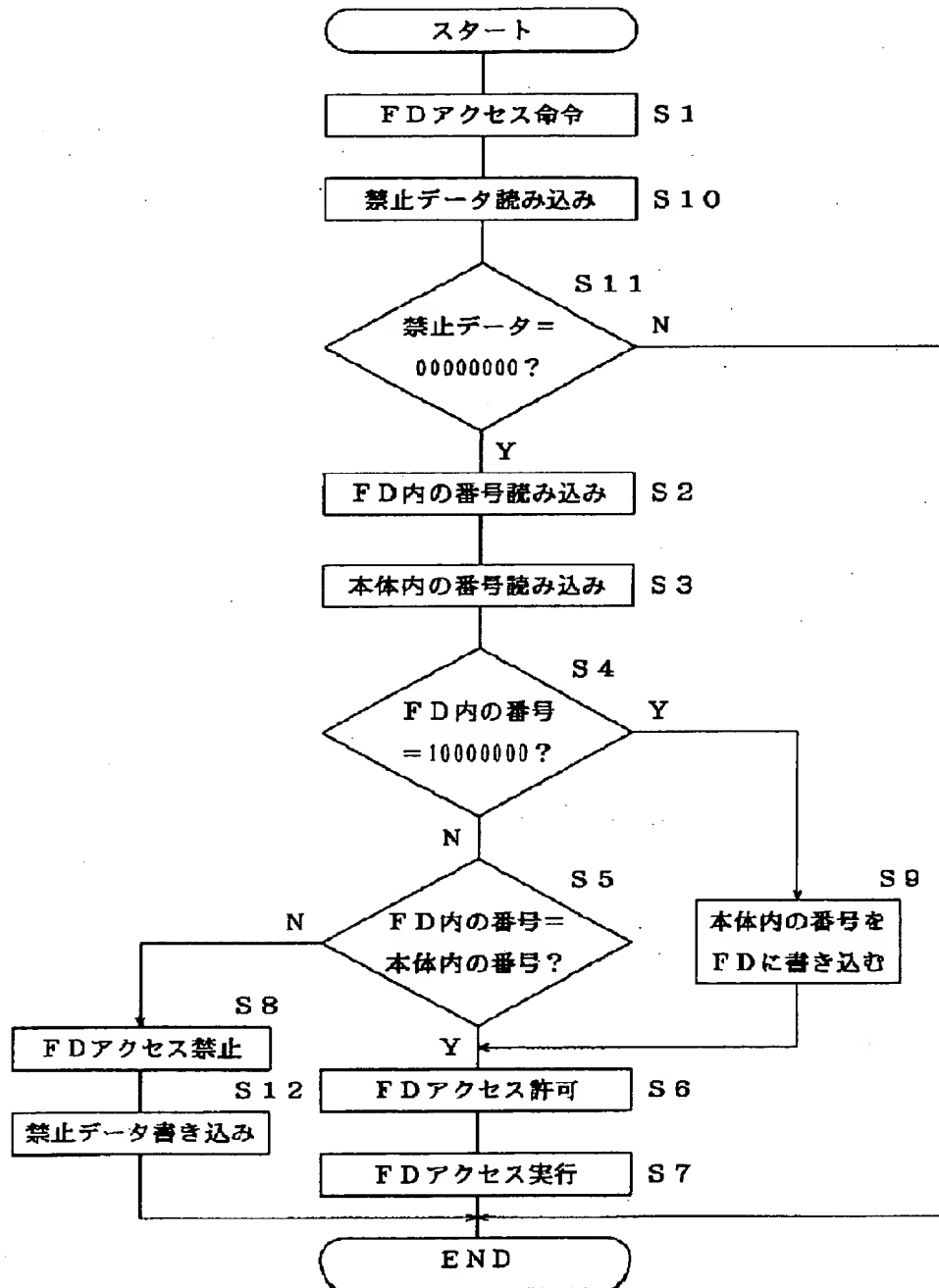
【図1】



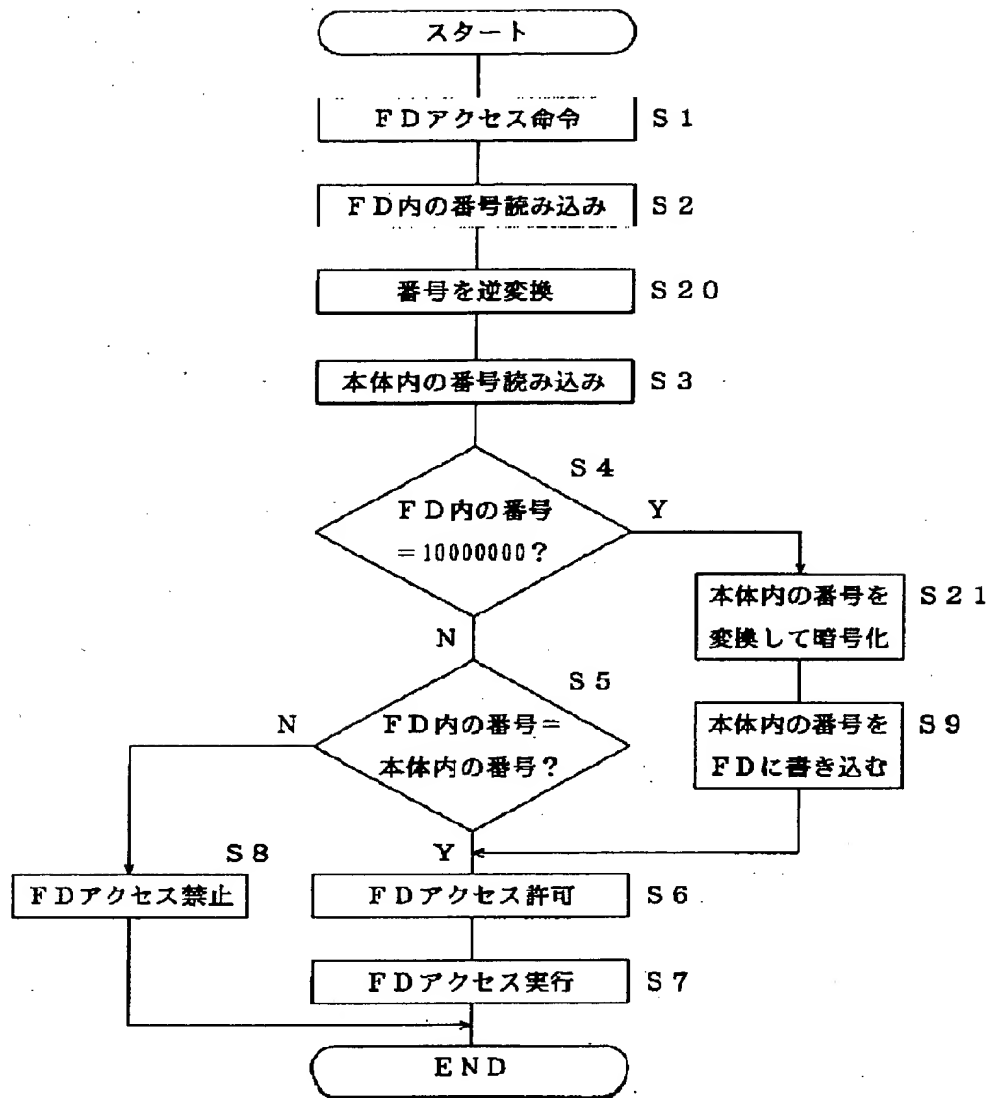
【図9】

セクタ1	01005555
2	00001234
3	10000001
4	
5	

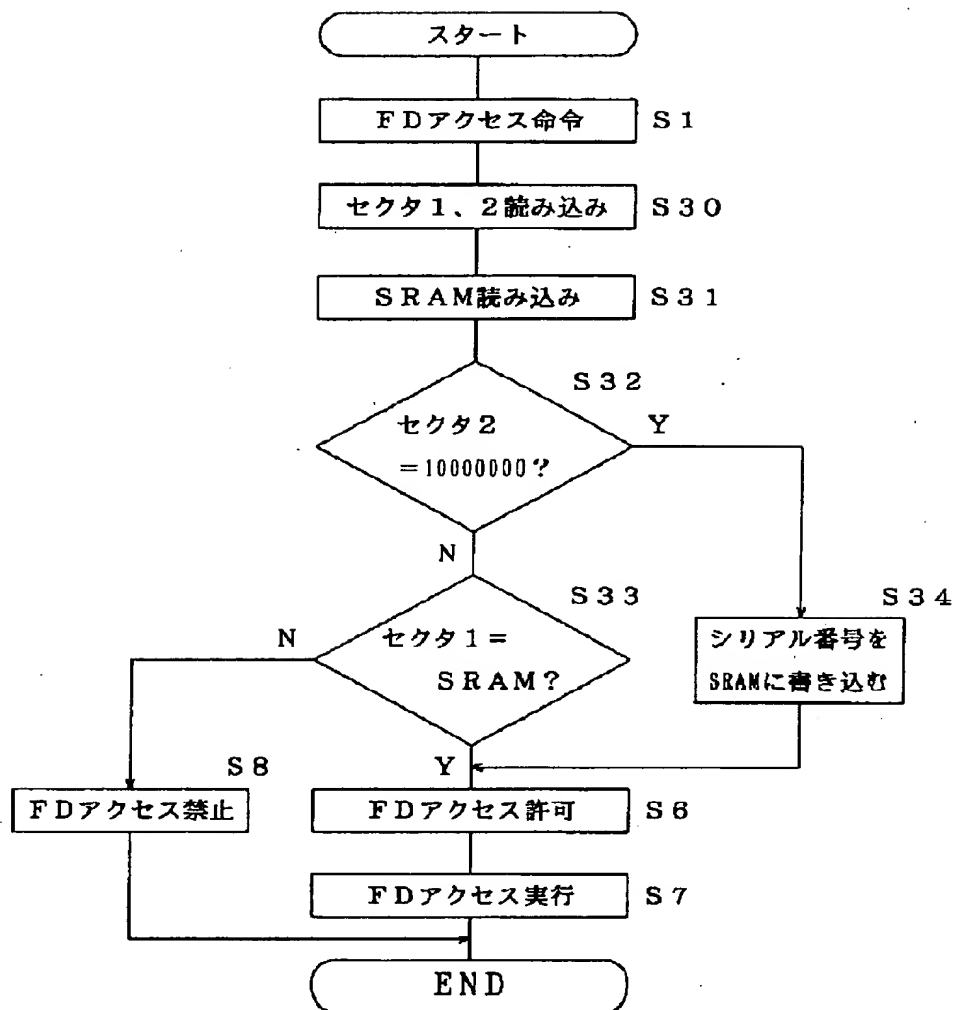
【図10】



【図11】



【図12】



【手続補正書】

【提出日】平成6年8月22日

【手続補正1】

【補正対象書類名】図面

【補正対象項目名】全図

【補正方法】変更

【補正内容】

【図4】

VRAM	↑上位
レジスタ	
RAM	
1/O	
ROM	↓下位

【図5】

0000+	
0100	00001234
.	
.	
.	
.	
.	

【図6】

セクタ1	01005555
2	10000000
3	
4	
5	

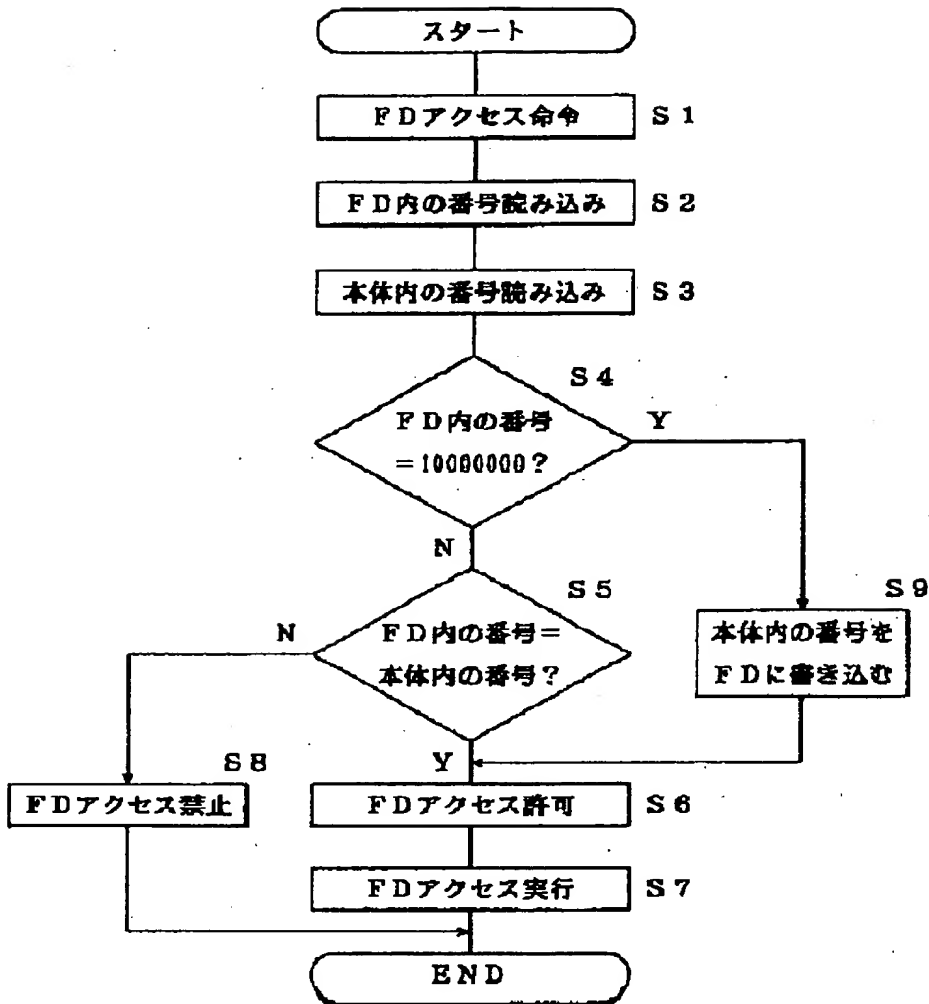
【図7】

セクタ1	01005555
2	00001234
3	
4	
5	

【図8】

セクタ1	01005555
2	00001234
3	00000000
4	
5	

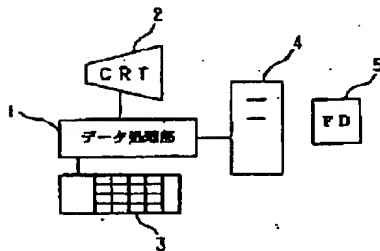
【図1】



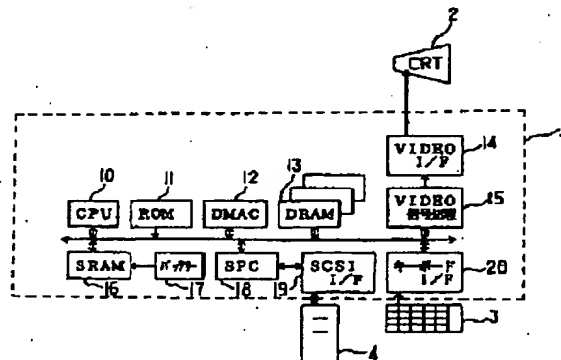
【図9】

セクタ1	01005555
2	00001234
3	10000001
4	
5	

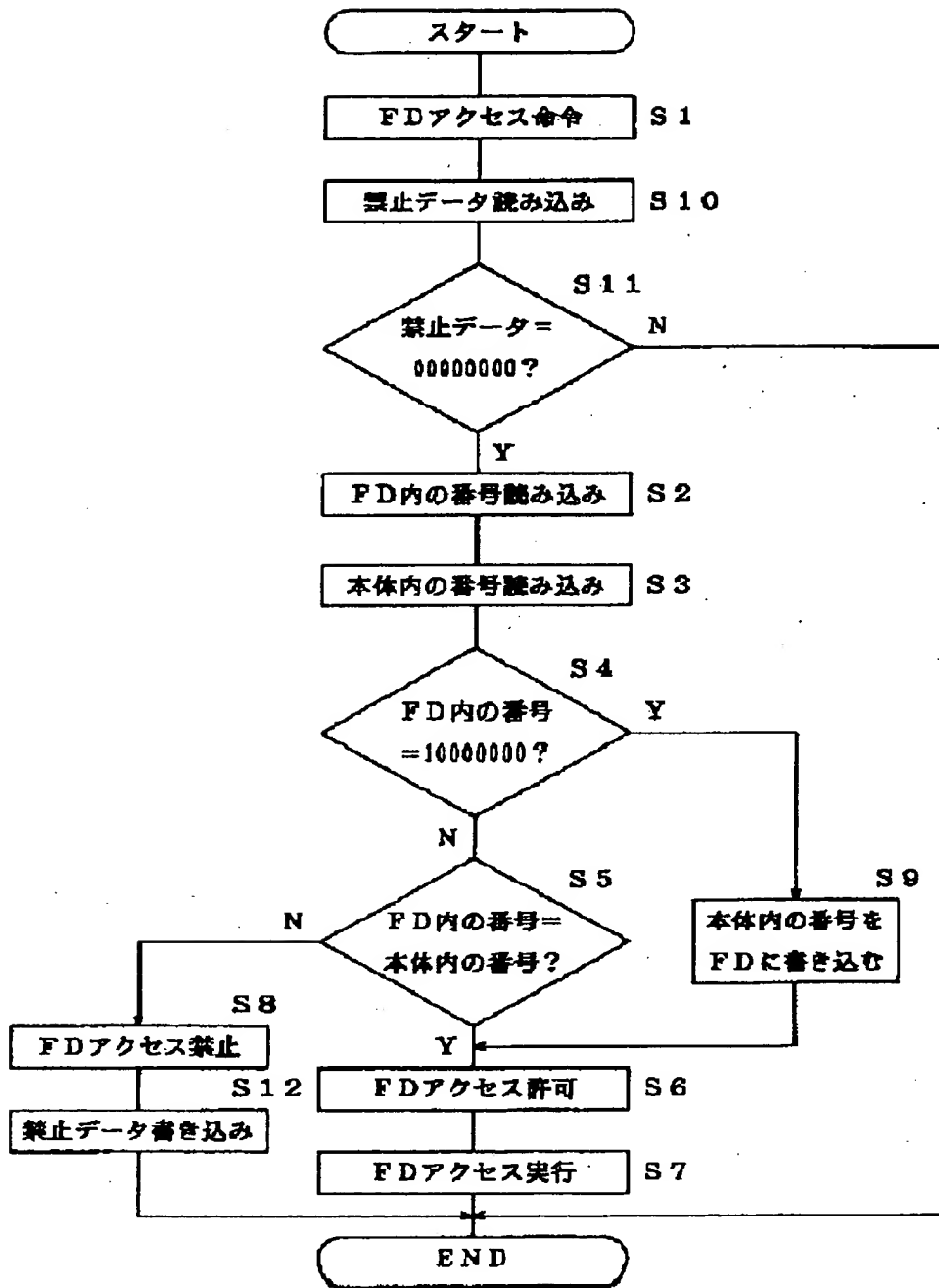
【図2】



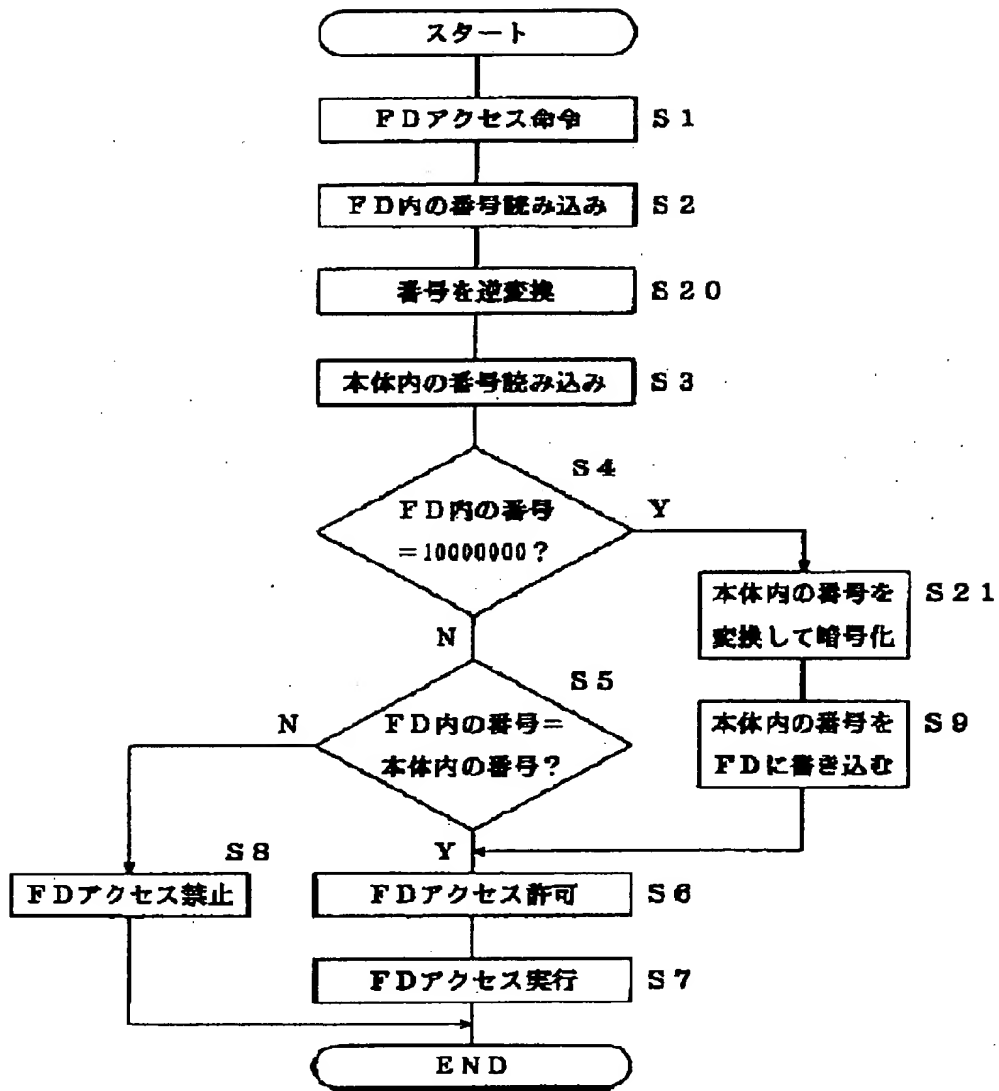
【図3】



【図10】



【図11】



【図12】

